

(No Model.)

T. A. EDISON.
ELECTRIC CONDUCTOR.

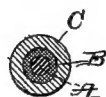
No. 470,924.

Patented Mar. 15, 1892.

FIG. 1.



FIG. 2.



ATTEST:
E. C. Rowland
William Pryor

INVENTOR:
Thomas A. Edison
By Geo. L. Lacey
Atty

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 470,924, dated March 15, 1892.

Application filed September 30, 1887. Serial No. 251,093. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain
5 new and useful Improvement in Electrical Conductors, (Case No. 732,) of which the following is a specification.

The object of my invention is to effectively insulate wire, so that it will be water-proof and
10 capable of being used in moist places and even under water without detriment to its insulating qualities, and also fire-proof, so that if by accident the wire becomes red-hot the insulating-covering will not be set on fire and
15 burned, but only oxidation will result, which will leave the wire pyro-insulated.

The main feature of the invention is the use as an insulating-covering of a mixture of rubber with an infusible material in the form
20 of a powder.

I prefer to employ crude gum-rubber, which I soften or partially dissolve by a suitable solvent—such as benzole—and then mix
25 in a suitable mixing or kneading mill with about twice the quantity of the infusible powder, such as kaolin, chalk, carbonate of zinc, or phosphate of lime. The proportions of these substances will vary with the use to which the wire is to be put. They must be
30 such that the covering, when placed upon the wire, will be flexible, water-proof, and a good insulator, and such that when the wire is heated the covering will not burst into a flame at any temperature up to the melting-point
35 of the wire. While pure rubber is an almost perfect insulator, it is so inflammable when used alone or in conjunction with cotton or other fabric that it cannot be safely used in electric-light wiring. In my invention the infusible substance mixed with the rubber
40 serves to prevent the flame, and a very considerable quantity thereof may be used without lowering the insulating and water-proof qualities too much for ordinary use. If the
45 wire is to be used in situations where it requires to be bent sharply and so must be very flexible, or if it is to be used in very wet places, then the minimum amount of infusible material which will make the covering
50 non-inflammable must be used; also, the amount of rubber to the infusible material

will vary, according to the character of the latter.

I prefer to employ for placing the covering upon the wire a press similar to the well-
55 known press for coating insulated wires with lead, except that only a small pressure is required, and the press therefore need not be one of great power.

The compound is placed in the press after
60 being well mixed and kneaded to a doughy consistency.

Before passing the wire through the press I prefer to cover it with woven or braided cotton in the ordinary manner, which may be
65 soaked with paraffine or other insulator. On the wire passing through the die of the machine, which is slightly larger than the wire, a very perfect and smooth coating of the compound of rubber and infusible material is
70 pressed upon it. Afterward the volatile solvent evaporates rapidly, and the coating hardens in a few seconds, so that the wire can be reeled up.

The completed wire is illustrated in the annexed drawings, Figure 1 being an elevation,
75 and Fig. 2 a cross-section thereof.

A is the wire, B the cotton covering, and C the covering of the rubber compound.

What I claim is—

1. The combination of a wire, a fabric covering thereon, and an outer covering of a mixture of rubber and infusible material, substantially as set forth.

2. A conducting-wire having an insulating-coating consisting of a quantity of rubber mixed with approximately twice as large a quantity of an infusible powder, whereby the coating is rendered practically non-combustible, substantially as described.

3. The conducting-wire having an insulating-coating consisting of a quantity of rubber mixed with a larger quantity of an infusible powder, whereby the coating is rendered practically non-combustible, substantially as
95 described.

This specification signed and witnessed this 26th day of September, 1887.

THOS. A. EDISON.

Witnesses:

WILLIAM PELZER,
E. C. ROWLAND.